

**Lab Instructions  
for  
Gross Anatomy  
Labs  
(WEEKS 1-7)**

**2006-07**

## **Introduction**

On the following pages you will find a lab description for each gross anatomy laboratory session which will occur during segment 1 of Block 2. These pages have been prepared as guides for you to use both before and during the lab sessions. Each lab session description includes the title and the appropriate pages in Grant's Dissector, specific instructions, learning objectives and a list of important structures that you should identify before leaving the lab.

We suggest that you read the dissector before coming to lab. This will allow you to familiarize yourself with the terms of the region and the specific tasks to be accomplished during the lab session. You may want to refer to the description during the lab session to ensure that you locate all of the important structures of the region.

## **Prosection**

What is a prosection?

A prosection is a dissection that is prepared by a small group of students or a faculty member before the regular class period. It is used as a demonstration for other students.

Each dissecting group will be responsible for one prosection during Block 2. These will not occur until the third segment of the block. You and your group will need to meet outside of regularly scheduled class time to prepare the dissection. Faculty will be available to help with this preparation. During the following lab session you and your group will use the prosection to demonstrate your knowledge of the region to your colleagues.

## **Monitoring and Care of Your Cadaver**

The moist dark environment inside the cadaver tables will occasionally provide the proper conditions for mold growth even in the presence of embalming fluid. Mold spores are part of the normal flora present on the surface of the body. Initial sites of mold growth are often associated with finger and toenails. Once established, the mold produces more spores that can easily be transferred to other parts of the body. Care must be taken to avoid spreading of the mold. Cadaver molds are typically of the same species as those found on moldy bread and do not represent a significant health risk.

At least twice a week, all surfaces of the body should be checked for mold growth. It is especially important to roll the body on its side and examine the inferior surfaces. Any region suspected of harboring mold spores should be sprayed with the oxyphenol-ethanol solution. This solution is hazardous and should be used with care.

### **Treatment of mold on skin**

On skin: Scrape mold off with a scalpel. Place scrapings on a fresh paper towel. Throw the towel away when finished. Spray the skin with oxyphenol. Wash scalpel and any other tools used thoroughly. Monitor site regularly.

### **Treatment of mold in dissected regions**

When possible remove the mold by scraping the area. If mold is invested in a tissue, carefully, with minimal disturbance, cut out the affected region and bag or throw out the contaminated tissue. Spray the area with oxyphenol.

At the end of each dissection period remember to place skin flaps over the exposed areas and close the plastic bag.

# LABS 1 and 2 Back and Laminectomy

GRANT'S DISSECTOR PGS. 4-11; 12-14

## Specific instructions for this lab session.

Make sure you read the entire chapter (Chapter 1) in the dissector before you come to the lab session. To begin the dissection, make the incisions on the skin of the back as shown in figure 1.07 (page 6) and described on the adjacent page. Remove the skin and superficial fascia together. Do not completely detach the skin from the body, just make skin flaps so that at the end of the lab you can use the skin flaps to cover your dissection. Follow the instructions in the dissector carefully beginning on page 7 and continue until you reach the transversospinalis section (page 10). Read this portion. You are not responsible for dissecting these muscles. Laminectomies will be done on several cadavers in the room and ready for you to view during the next dissection period. You are responsible for all of the structures listed in the yellow area on pages 12-14 even if your cadaver does not have a laminectomy.

**Special Note: You will not dissect the suboccipital triangle (pages 11-12). You are not responsible for this material.** However, you do need to know the bony landmarks of this region as listed on pages 4-6 (posterior skull, vertebral column and scapula).

## Following the completion of these two lab sessions students should be able to identify:

1. The surface landmarks of the back.
2. The parts and details of the bony vertebral column, scapula, iliac crest and posterior skull as given on pages 4-6.
3. Muscles of the superficial, intermediate and deep back.
4. The greater occipital nerve (specifically) and recognize the segmental arrangement of the cutaneous branches of other dorsal primary rami.
5. The contents of the vertebral canal as detailed on pages 12-14.

## List of Important Structures

### Muscles:

Trapezius  
Latissimus dorsi  
Rhomboid major and minor  
Levator scapulae  
Serratus posterior superior  
Serratus posterior inferior  
Splenius capitis and cervicis  
Semispinalis capitis  
Erector spinae (3 parts)  
    Iliocostalis  
    Longissimus  
    Spinalis

### Nerves:

Greater occipital nerve  
Accessory nerve  
Dorsal ramus  
Ventral ramus  
Spinal nerve

### Arteries:

Occipital artery

### Other:

Thoracolumbar fascia  
Epidural space  
Dural sac, dura mater  
Arachnoid mater  
Subarachnoid space  
Denticulate ligaments  
Ventral and dorsal roots  
Dorsal root ganglion (spinal ganglion)  
Conus medullaris  
Cauda equina  
Filum terminale  
**Vertebrae:**  
Intervertebral foramen  
Vertebral foramen  
Transverse foramen

## LAB 3 Shoulder and Axilla

GRANT'S DISSECTOR PGS. 15-22; 43-46

### Specific instructions for this lab session

Begin by reading the first several pages of Chapter 2 (pgs. 15-22) in the dissector. For the shoulder dissection, the cadaver should be in the prone position (face down). You may need to extend your skin incisions on the shoulder. Don't worry about removing the skin from the entire upper extremity at this time. To begin the shoulder dissection start reading in the second column of page 17. Read and complete this dissection, which continues through page 19.

The next area for dissection is the pectoral region (pgs. 43-46). Make the skin incision as indicated in figure 3.05, page 43. You **DO NOT** need to encircle the nipples as shown and **DO NOT** dissect the breasts. Simply remove them with the skin. Identify the nerves, muscles and vessels of the pectoral region as outlined in the dissector (pgs. 45-46). Instructions for dissection of the axilla begin on page 19. Follow these through page 22.

### Following completion of this lab students should be able to:

1. Identify the bony landmarks of the shoulder.
2. Identify the muscles, nerves, vessels and ligaments indicated in the shoulder region (pgs 18-19).
3. Identify muscles, nerves and vessels indicated in the pectoral region (pgs. 43-46).
4. Identify the walls and contents of the axilla (pgs. 19-22).

### List of Important Structures

#### Muscles:

Deltoid  
Teres major and minor  
Triceps brachii  
Supraspinatus  
Infraspinatus  
Pectoralis major and minor  
Serratus anterior  
Subscapularis  
Biceps brachii  
Coracobrachialis  
Latissimus dorsi

#### Nerves:

Medial pectoral  
Lateral pectoral  
Intercostobrachial

#### Axillary

Radial  
Brachial plexus: lateral, medial  
and posterior cords  
Ulnar  
Median  
Musculocutaneous  
Medial cutaneous nerve of arm  
Medial cutaneous nerve of  
forearm  
Suprascapular  
Upper and lower subscapular  
Thoracodorsal  
Long thoracic

#### Other:

Suprascapular ligament

#### Vessels:

Cephalic vein  
Basilic vein  
Thoracoacromial artery (and  
branches)  
Lateral thoracic artery  
Axillary artery  
Brachial artery  
Superior thoracic artery  
Subscapular artery  
Scapular circumflex artery  
Anterior and posterior humeral  
circumflex artery  
Deep brachial artery  
Suprascapular artery  
Transverse cervical artery  
Dorsal scapular artery

## **LAB 4 Review Axilla**

**GRANT'S DISSECTOR PGS. 19-22.**

### **Specific instruction for this lab session**

During this lab session you will want to complete the dissection of the axilla and review its contents. Read and carefully follow the instructions given on pages 19-22. Stop when you come to the dissection of the arm.

### **Following the completion of this lab session students should be able to:**

1. Identify the boundaries and contents of the axilla as indicated on pgs. 19-22.

### **List of Important Structures**

**All of the important structures were listed with the previous lab session.**

## **LAB 5 Arm and Flexor Forearm**

**GRANT'S DISSECTOR PGS. 15-17; 22-30**

### **Specific instructions for this lab session**

To begin this lab you will need to finish the skin incisions on the upper limb as illustrated on page 16, fig. 2.02. Do not remove the skin of the hand at this time. Read carefully the section on the superficial structures of the upper limb (pgs. 15-17). Remember that many of these structures will be cut when you remove the skin as they are cutaneous. Take care to locate the superficial veins and nerves of the forearm. Read and carefully follow the instructions given on pgs. 15-17 and 23-29. Stop when you come to the palm of the hand (top of page 30).

### **Following completion of this lab session students should be able to identify:**

1. The structures listed in the cubital fossa, posterior and anterior fascial compartments of the arm as indicated on pgs. 22-30.
2. The bony landmarks of the arm.
3. The structures of the forearm highlighted on pgs. 26-29.
4. The bony landmarks of the forearm.

### **List of Important Structures**

#### **ARM**

##### **Muscles:**

Brachioradialis  
Coracobrachialis  
Biceps brachii  
Brachialis

##### **Nerves:**

Musculocutaneous  
Lateral cutaneous nerve of the forearm  
Ulnar  
Median  
Radial

##### **Vessels:**

Deep brachii artery  
Brachial artery  
Basilic vein  
Cephalic vein  
Median cubital vein

##### **Other:**

Bicipital aponeurosis and tendon

#### **FLEXOR FOREARM**

##### **Muscles:**

Flexor carpi radialis  
Flexor digitorum superficialis  
Flexor carpi ulnaris  
Pronator teres  
Flexor digitorum profundus  
Pronator quadratus  
Palmaris longus  
Flexor pollicis longus  
Interosseous membrane

##### **Nerves:**

Ulnar  
Median  
Anterior interosseous  
Radial  
Superficial  
Deep

##### **Vessels:**

Brachial artery  
Radial artery  
Ulnar artery  
Common interosseous  
Anterior interosseous  
Posterior interosseous

## **LAB 6 Extensor Forearm and Hand**

**GRANT'S DISSECTOR PGS. 30-36**

### **Specific instructions for this lab session**

At this point you will need to remove the skin from the palm of the hand. It is very tightly adherent to the palmar aponeurosis. You need to remove it in small pieces. These cannot be saved. You do not need to remove the skin from every finger. Remove enough skin so that you have a good representation of the structures of the digits. Once you have completely removed the skin on the palm, begin the dissection described on pgs. 30-35. After you have completed the dissection of the palm of the hand, move on to the extensor region of the forearm. Carefully read and complete the dissection as described in the dissector on pgs. 35-36.

### **Following the completion of this lab session students should be able to identify:**

1. The bony landmarks of the hand.
2. The structures of the palm of the hand bolded and indicated on pgs. 30-35.
3. The structures of the extensor forearm and dorsum of the hand highlighted on pgs. 35-36.

### **List of Important Structures**

#### **Muscles:**

Palmaris brevis  
Abductor pollicis brevis  
Opponens pollicis  
Flexor pollicis brevis  
Abductor digiti minimi  
Opponens digiti minimi  
Flexor digiti minimi  
Lumbricals  
Adductor pollicis  
Palmar interossei  
Dorsal interossei  
Abductor pollicis longus  
Extensor pollicis brevis  
Extensor pollicis longus  
Extensor carpi radialis longus  
Extensor carpi radialis brevis  
Brachioradialis  
Extensor carpi ulnaris  
Extensor digitorum  
Supinator  
Extensor indicis

#### **Vessels:**

Radial artery  
Deep palmar arterial arch  
Ulnar artery  
Superficial palmar arch

#### **Nerves:**

Ulnar  
Deep branch  
Digital branch  
Median  
Recurrent branch  
Digital branches  
Radial  
Posterior interosseous

#### **Other:**

Transverse carpal ligament (Flexor retinaculum)  
Palmar aponeurosis  
Fibrous digital sheaths  
Extensor expansion



## **LAB 7 Joints of Upper Limb**

**GRANT'S DISSECTOR PGS. 37-41**

### **Specific instructions for this lab session**

You will complete your observation of the upper limb by dissecting one of the joints of the extremity. Each table is responsible for the dissection of one joint (see the list below). Follow the directions given for your assigned joint. You will need to observe the other joints of the upper limb at adjacent tables. I suggest that you only dissect your assigned joint on one side of the body, as you will have to remove all of the surrounding soft tissue to visualize the structures of the joint.

### **Following the completion of this lab session students should be able to identify:**

1. The bony features pertinent to the shoulder, elbow and wrist joints.
2. The highlighted structures of the shoulder, elbow and wrist joints given on pgs. 37-41.

#### **Joint assignment:**

	<u>Shoulder</u>	<u>Elbow</u>	<u>Wrist</u>
Tables	1,4,7,10,13 16,19,22,25 28, 31, 34, 37, 40	2,5,8,11,14 17,20,23,26 29, 32, 35, 38	3,6,9,12,15 18,21,24,27 30, 33, 36, 39

### **List of important structures**

#### **Shoulder:**

Glenoid labrum

Glenohumeral ligaments

Superior

Middle

Inferior

Tendon of the long head of the biceps brachii

Coracoacromial ligament and arch

#### **Elbow:**

Anular ligament

Radial collateral ligament

Ulnar collateral ligament

#### **Wrist:**

Transverse carpal ligament (Flexor retinaculum)

Articular disc

Articular surface of radius, scaphoid, lunate, triquetrum

## **LAB 8 Thoracic Wall, Lungs and Pleura**

**GRANT'S DISSECTOR PGS. 42-51**

### **Specific instructions for this lab session**

Begin today reviewing the material on pgs. 42-46 of the dissector. This covers the bony landmarks of the thoracic wall and the nerves, muscles and vessels of the pectoral region. After you have examined the intercostal muscles you will need to remove the anterior thoracic wall. Read the yellow area on the removal of the anterior thoracic wall completely before you begin. You will need to use bone cutters or a saw that we will supply. Do your best to maintain some portion of the underlying parietal pleura. Remember the pleura is tightly adherent to the breastplate. You may want to ask the faculty for assistance as you begin. Pages 48 and 49 give a description of the pleural cavities. Read these carefully. Next you need to remove the lungs. Read the description given on pages 50 and 51. Make sure you can see the structures of the root of the lung before you use the scalpel. Once the lungs are removed you can visualize the intercostal structures much more easily and examine and compare the features of the right and left lung (pages 50-51). **You are NOT responsible for specific segmental bronchi and bronchopulmonary segments.**

### **Following the completion of this lab session students should be able to identify:**

1. The bony landmarks and muscles of the thoracic wall.
2. The highlighted structures of the intercostal spaces and the isolated anterior thoracic wall (pgs. 46-48).
3. The extent and specific features of the pleural cavities.
4. The structures of the right and left lungs as described on pages 50 and 51.

### **List of Important Structures**

#### **Muscles:**

Pectoralis major and minor  
Serratus anterior  
External intercostal  
Internal intercostal  
Innermost intercostal  
Transversus thoracis

#### **Nerves:**

Lateral cutaneous  
Intercostobrachial  
Medial pectoral  
Lateral pectoral  
Phrenic  
Intercostal  
Sympathetic trunk

#### **Vessels:**

Cephalic vein  
Thoracoacromial artery  
Lateral thoracic artery  
Internal thoracic artery  
Anterior intercostal artery and vein  
Posterior intercostal artery and vein  
Pulmonary artery and vein

#### **Other:**

Parietal pleura (subdivisions)  
Visceral pleura  
Pleural cavities  
Pleural recesses-  
costomediastinal,  
costodiaphragmatic  
Fissures on the lungs  
Lobes of the lungs  
Root (hilus) of the lung  
Surfaces and features of the  
lungs-cardiac notch, lingula  
Pulmonary ligament  
Bronchus-main, lobar, segmental

## LAB 9 Heart and Middle Mediastinum

GRANT'S DISSECTOR PGS. 52-59

### Specific instructions for this lab session

The goal for today's lab session is to inspect the heart and great vessels *in situ*, and then remove the heart from the thoracic cavity. Read the entire description of the pericardium given on page 52 and identify the great vessels before opening the pericardium. (If your cadaver had open heart surgery you may have difficulty locating the pericardium on the anterior surface of the heart, as thoracic surgeons do not close the pericardium following this type of surgery.) Open the pericardial sac following the directions given on page 52-54. Take time to examine the heart *in situ* (as it normally lies in the pericardium). Remove the heart by following the directions given on page 54. Complete today's dissection by following the description given on pages 54-59. Your heart will most likely be filled with clotted blood. You will need to remove these clots so that you can inspect the chambers and valves of the heart. You may discard the blood in the regular garbage cans in the lab. After you have removed the majority of the blood you may want to rinse the chambers of the heart at the sink. **Please do not discard the blood clots in the sink.** (As you might imagine this causes considerable problems for our plumbers.)

### Following the completion of this lab session students should be able to identify:

1. The pericardial reflection indicated on page 52-54.
2. The cardiac vessels (pgs. 54-56).
3. The features of the right atrium and ventricle and the left atrium and ventricle highlighted on pgs. 56-59.

### List of Important Structures

#### Nerves:

Left vagus  
Recurrent laryngeal

#### Blood vessels:

Arch of aorta  
Ascending aorta  
Superior vena cava  
Inferior vena cava  
Pulmonary trunk  
Pulmonary veins

#### Other:

Ligamentum arteriosum

#### Pericardium:

Serous pericardium  
Fibrous pericardium  
Pericardial cavity  
Oblique pericardial sinus  
Transverse pericardial sinus

#### Coronary vessels:

Left coronary artery  
Anterior interventricular branch  
Circumflex branch  
Right coronary artery  
Marginal branch  
Posterior interventricular branch  
Anterior right atrial branch  
Great cardiac vein  
Middle cardiac vein

#### Heart:

Atrioventricular sulcus  
Interventricular sulcus  
Right and left auricles  
Coronary sinus  
Pectinate muscle  
Cristae terminalis  
Valve of the coronary sinus  
Fossa ovalis  
Location of the SA and AV nodes

#### Chordae tendineae

Papillary muscles  
Trabeculae carneae  
Septomarginal trabeculae  
Conus arteriosus or infundibulum

#### Heart valves:

Aortic and pulmonary semilunar  
Atrioventricular (mitral/bicuspid)  
Atrioventricular (tricuspid)

## **LAB 10 Superior and Posterior Mediastinum**

**GRANT'S DISSECTOR PGS. 59-63**

### **Specific instruction for this lab session**

Review the boundaries of the posterior mediastinum before beginning the dissection. Follow the directions given on pages 61-63 to locate the structures of the posterior mediastinum. You may find the structures of the posterior mediastinum, particularly the azygos system, somewhat displaced from the positions indicated in the atlas. To better view the structures of the superior mediastinum you will need to remove the manubrium of the sternum. It's best if you saw (you may use bone cutters) through the first sternocostal joint and free the undersurface of the manubrium from the underlying fascia. You may also want to break through the sternoclavicular joint, but do not remove the attachment of the sternocleidomastoid from the manubrium. Simply reflect the manubrium superiorly after you have disarticulated it as explained. Complete the dissection of the superior mediastinum as described on pages 59-61.

### **Following the completion of this lab session students should be able to identify:**

1. The highlighted structures of the superior and posterior mediastinum indicated on pages 28-34.

### **List of Important Structures**

#### **Nerves:**

Right and left vagus  
Esophageal plexus  
Anterior and posterior vagal trunks  
Sympathetic trunk  
Greater splanchnic  
Paravertebral ganglia  
Intercostal  
Right and left phrenic  
Left recurrent laryngeal

#### **Vessels:**

Azygos vein  
Hemiazygos vein  
Accessory hemiazygos vein  
Descending aorta  
Posterior intercostal arteries  
Posterior intercostal veins  
Bronchial arteries  
Right and left brachiocephalic veins  
Superior vena cava  
Brachiocephalic artery

Left common carotid artery  
Left subclavian artery

#### **Other:**

Esophagus  
Thoracic duct  
Bifurcation of the trachea  
Carina

